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Rushville, Indiana

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National Notebook

Patented by E. W. Hill, July 5, 1898.

SUBJECT OF STUDY:

PATHOLOGY.

1903 Notes 1904

Lectures & Laboratory.

Dr. Frank Wynn, Professor of Path.

Property of

Lowell M. Green.

To index the book, write below on the margin, the name of the study

Lecture No. I. September,29th,1903.

Pathology is the science which treats of disease.

Disease is any deviation from the average or normal health.

Pathology is divided into General and Special.

General Pathology is the study of the general or the beginning of the abnormal processes,conditions and the cause factors in disease without reference to their special showings on particular organs.

Special Pathology deals with the morphologies and details of formations in the individual organs or particular parts of the body.

Pathology treats of the causes,structural changes and the sequel changes of disease.

Tumors:-

Literally, tumor means a swelling, but from the physician's or the surgeon's standpoint a tumor is a new growth or formation, atypical in structure and has no function to the body and is not produced by infection.

The growth of a tumor is like the growth of any other organism as it begins as a cell and grows by multiplying, the same as a healthy normal cell. Thus it grows by karyokinesis.

Tumors arise from pre-existing tissue in the body and usually begin singly. However there are notable exception to this rule.

Tumors occur most generally in adult life and are new growths. Explanation offered for this is because of the unequal developement of the tissues, for as we get older the tendency is for epithelium to increase and connective tissue to decrease.

The most common situation of tumors differ in the old and young. Thus in earlier years the most common seat is in the eye, kidney, bones and testicles, while in the old they appear most commonly in the stomach, liver and mamma. Malignant tumors are about twice as frequent in females as in males. This statement however does not hold good for tumors of the individual organs. Climate, food, race and social conditions are said to bear upon predisposition.

Causes of tumors:-

Predisposition or heredity has been calculated to be the cause of some tumors as I5 % of all tumors are found to exist in certain families. Some claim that irritation is the cause or starting of tumors as example the chimney sweepers of London. However all tumors cannot be traced to irritation. Some believe t that continous irritation leads to cancer. It is thought that chemical and thermal irritation as well as mechanical will cause tumors. Inflamation and foreign bodies seem to cause tumors as gall stones will sometimes cause tumor of the bladder. Some believe that cancer is caused by a parasite and the argument for this is the fact that it spreads so rapidly and so completely over the body. The spreading of cancer takes place through the lymph channels. Others think that cancer is caused by bacteria and still others by protozoa.

Growth of tumors:-

Tumors grow like any other organism and begins as a single cell. This then grows by the multiplication of the ce cells. Thus tumors are the proliferation of the pre-existing cells.

Modes of extension of tumors:-

Tumors may extend by central growth,thus simply expanding or they may grow largely at the surface or by peri-

pheral growth.

Shape of tumors:-

Tumors have various shapes as nodular -fungoid-- tuberous - polypoid - papillary,etc.

Size of tumors:-

Tumors vary greatly in size and exist from the very small to the large tumor of 50 to 60 lbs.

Structure of tumors:-

The structure of tumors histologically do not absolutely differ from that of healthy tissue and in all cases they conform with one or more of the elementary tissues of the body. However the cells of a tumor may not be exactly like any of the tissue cells but may be and sometimes modifications of them as they may be larger or smaller than the normal cells or of embryonal structure. Tumor tissue may degenerate the same as any other tissue.

Metastasis:-

Metastasis is the dissemination of tumors and is one of the most important elements of malignancy. Tumors have not been transplanted to other animals or persons with any great success and it is believed that in the majority of cases it is impossible to reproduce tumor by transplantation.

Clinical classification of tumors:-

Clinically tumors are classified into two groups,viz:- Malignant tumors and benign tumors.

A malignant tumor tends to destroy life and are not generally defined or encapsulated and show a tendency to spread. They generaly disturb the health from the first and also tend to recur after being removed or to spread either by direct invasion or by metastasis.

A benign tumor is one that generally does not affect the generall health and is not dangerous except when located on a vital structure. They then may produce death by pressure.

Histological Classification of Tumors:- (see next page)

Connective tissue type.

Normal tissue.	Tumors.
Fibrillar connective tissue	Fibroma
Mucous tissue	Myxoma
Embryonal connective tissue	Sarcoma
Endothelial cells	Endothelioma
Fat tissue	Lipoma
Cartilage	Chrondroma
Bone	Osteoma
Neuroglia	Glioma

Muscle-tissue type - Myomata.

Smooth muscle tissue	Leiomyoma
Striated muscle tissue	Rhabdomyoma

Nerve-tissue type - Neuromata.

Vascular-tissue type - Angiomata.

Blood-vessels	Angioma
Lymph-vessels	Lymphangioma

Epithelial-tissue type.

Glands	Adenoma
Various forms of epithelial cells and associated tissues.	Carcinoma

[Reference Delafield + Prudden Path. Anat. + Hist.]

Epithelioma is a form of Carcinoma.

Lecture No. 2. October,6th,I903.

Etiology of disease:- The causes of disease may be classified as predisposing and determining.

Predisposing causes is the rendering the system or the part weaker or by lowering its vitality.

Determining cause is the specific cause of disease. Some of the causes of disease are as follows:- excessive heat or cold-deficient food,either as to quantity or as to quality- failure of nourishment,as food,oxygen ,&,to reach its intended destination or by its indigestion. Deficient oxygen causes paleness and aenemia and can be caused by the reduction of red blood corpuscles,which will prevent the oxygen from reaching its destination. Excessive functional activity and heredity will also cause disease. Indisease the fat wastes away first and then the nervous and muscular tissues. Complete withdrawal of food and water will cause disease in from 7 to I2 days. Water alone will keep life in the body for a long period.

Heredity is a predisposing factor in disease and is a designated abnormal weakness or resistance which is transmitted from mother or father to the offspring. Heredity may be direct or remote,as in case of former,the parent presents the condition to offspring or by the latter,as in case where the

hereditary trait is latent in the parent and shows itself in the offspring.

Burns:- If one third of the body is burned the person does not generally sur vive. Burns cause destruction of about one third of the red blood corpuscles, thus causing death. Low temperature causes almost the same pathological changes as heat. Exposure to cold does not produce disease but predisposes the system.

Some of the mechanical means of producing disease are as follows:-

a - Friction, as rubbing of shoes.
b - Dust particles, as dust in factories.
c - Pressure, as corsets.
d - Concussion.
e - Shock.
f - Syncope - weakness of heart action.

Poisons:- There are three groups of poisons, viz:- mineral - vegitable & animal. A poison is a substance which when introduced into the system in relative small doses will disturb the structural and functional activity of the same.

For action - effects - fate - & elimination of poisons see Stengel's Pathology, pages 24 & 25.

Some of the mineral poisons are the acids as H_2SO_4, HNO_3, & KOH. These produce local changes.

Some of the vegitable poisons are quinine,

morphine,atropine,ptomaines or bacteria. These cause changes in the blood.

Some of the animal poisons are formic acid, snake bite,sting of bees,&. These cause imperceptible changes.

The mineral poisons abstaact water from the tissues and coagulate albumen.

Parenchyma-poisons or organic poisons acts upon the parenchymas of an organ . These poisons are cantharides,turpentine,arsenic,lead,phosphorous. They cause the tissues to disintergrate.

$AgNO_3$ deposited in cutus vera causes argeria. Lead affect the intestines and the stomach. It stimulates an overgrowth of connective tissue and causes Bright's disease and painters colic,&.

Lecture No. 3. October,13th,1903.

Causation of disease:- Lead causes inflammation of the nerve trunks. Mercury is a powerful poison and acts upon the parenchyma of an organ.

Ergot acts upon the vascular system and upon the unstriped muscle fibers. Blood Poisons:- Carbon-monoxide,hydrocyanic acid and simular poisons combine with the hemoglobin of the blood and cause death by asphyxiation. Coal tar preparations, carbolic acid,antipyrine,&,cause disintergration of the red blood corpuscles.

Nerve and Heart Poisons:- Chloroform, strychina,nicotine,ether,alcohol,opium and its alkaloids act upon the different organs,cause death and leaves no trace behind.

Vegitable Parasites.:- These parasites are v very important causes of disease. They enter the body and set up an infection. The diseases caused by these organisms are called infectious diseases,which are also contagious. Animal parasites also cause disease. Intoxication is an influence exercised over certain parts of the body by a substance formed outside the body. Toxic substances are not living.

Disturbances of the Nervous System:- The heart some times becomes weakened and is unable to force the blood to all parts of the body. The parts not sufficiently nourished

become diseased. The pericardium may become filled with fluid and disease is the result. If heart action is weakened for a long time,say five or six weeks,hypostatic congestion results, that is,force of gravity causes the blood to sink to the dependent parts of the body. This condition occurs in low fevers and just before death. Vaso-motor disturbances are dependent upon the nervous system. Certain diseases or poisons act upon the nervous system,cause contraction of the small arteries,causing the blood pressure to be raised and the heart action to be impeded. The result is venous congestion. Hyperemia is the increased blood supply to a part. Active hyperemia is the increased arterial blood to a part. Passive hyperemia is the increased venous supply of blood to the part. Anemia is the condition in which the tissue contains less than its proper quantity of blood. Ischemia is localized anemia.

Hemorrhage:- Hemorrhage is the escape of all the constituents of the blood from the blood vessels. The small hemorrhages are called petechial,while the large ones are called suffusions. When the blood leaves a clearly defined clot it is called a hematoma. Hemorrhage of the lungs is called hemostysis,of the stomach,hematemesis,uterine hemorrhage at the menses, menorrhagia and between the menses,metrorrhagia. Hemorrhages occur both in the pericardium and in the pleural cavity. When red blood corpuscles escape from the blood-vessels,the change is

called diapedesis. A very large hemorrhage may cause death by cerebral anemia. Usually the patient remains unconscious for a while and then recovers slowly.

Lecture No. 4. October November,20th,1903.

Edema or Dropsy:-

Definition:- Edema or dropsy is the increase of liquid within the tissue.

Causes:- 1st:- Increased blood pressure.

2nd:- Decrease of tissue elasticity and pressure.

3rd:- Variation of blood rendering it more diffussible.

4th:- Osmotic power of the contents of the vessels being increased.

5th:- Stoppage of the flow of lymph.

6th:- Increased pervious of the blood vessel walls.

Results:- Edema may occur locally or generally. Function of the affected part is impaired and owing to the location it is sometimes very serious as edema of the epiglottis,brain or lungs. The cells may degenerate if the edema presists for some time.

Hemorrhage:-

Definition:- Hemorrhage is the escape of the constituents of the blood as a whole from the vessel walls and is subdivided as follows:- Arterial,venous and capillary,according to the vessel or part from which it makes its escape and is termed

Parenchymatous if it escapes from all three at the same time.

Hemorrhage may occur by diapedesis or by actual rupture of the vessel wall.

Diapedesis is the passing of the red blood corpuscles thro the vessel walls to the surrounding tissues.

Causes of Hemorrhages:-

1st:- By trauma.

2nd:- Blood vessel wall being diseased.

3rd:- Increased blood pressure.

4th:- Neuropathic,being nervous control of wall

5th:- Hemorrhagic diathesis.

Results:- A very large or violent hemorrhage will cause death but as a rule the patient recovers after being unconscious for several hours.

Thrombus:-

Definition:- A thrombus is a blood clot which forms in the vessel during life.

Causes:- Thrombi are caused by alteration of the blood current - notably slowing of the current,changes in the vessel walls and alterations of the blood itself. Generally two or all three of the above causes exist in a case of thrombus. Thrombi due to decrease in the blood current are frequently seen

in the heart,vessels of the lower extremities and also in the sinuses of the brain as these may occur after having exhausting fevers ,&. An aneurism is generally a seat for thrombi.

Effects of Thrombi:- If a colateral circulation is established,which frequently is the case,noserious results are seen. If a large vein is obstructed dropsy or edema may follow,while obstruction of an artery causes local anemia. In the latter case if colateral circulation is not established we have the degeneration or the necrosis of the part. If a small artery is obstructed we may have a hemorrhagic infarction. The softening of a thrombus generall produces an embolus and if the thrombus is infected will cause pyemia.

We have red and white thrombi,the former consisting of fibrin and red blood corpuscles,while the latter consists of the stacking of the blood plaques,which slowly accumilate from actively circulating blood. A primary thrombus is the one first formed while its extension is called a secondary throbus. We have a lateral,obstructive and ball thrombi,the lateral extending along the vessel wall,obstructive when the lumen of the vessel is completely obliterated and a ball thrombus when a ball like clot obstructs the heart. Thrombus is natures way of stopping a hemorrhage,then the clot undergoes organization and the blood

clot becomes living tissue. Thus the most favorable turn a thrombu can take is organization. Some times the thrombus softens in the center and we have a cyst like formation. If a thrombus is infected and softens or degenerates the vessel walls also generally share greatly in the process and the result is an infectious emboli and pyemia. Sometimes the thrombus becomes calcarious, especially in dilated veins and then it is known as phleboliths. If however this change takes place in the artery or heart it is termed respectively:-arterioliths or cardioliths. These two latter however are rarely met with. Stengel I58.

Lecture No. 5. October,27th,1903.

Embolism is the plugging of a vessel,either artery or vein,by a clot or foreign body,which has been brought to its place by the blood current.

Thus an emboli is a foreign body in the blood. Emboli occur most frequently in the lungs,brain,kidney and spleen. Emboli occur less frequently in the heart,retina,liver and small insettines.

The most common emboli are detached portions of thrombi. Embolism may also be caused by masses of bacteria - parasites - small portions of the heart valves - tumor cells - droplets of fat - dust,&.

If a collateral circulation is established shortly after embolism the emboli will do no harm if the same is not infected. Thus the results are more serious where an embolus occurs in a terminal artery. Therefore all emboli generally result seriously if of large size or if they occur in terminal artery or if composed of infectious material; otherwise they are not of much consequence. Where an embolus occurs in a terminal artery we have what is called an infarct formed.

An infarct is the region which was supplied

with blood by the occluded vessel. Infarcts are generally wedge shaped,with the base directed towards the periphery of the organ and the apex is directed towards the incoming vessel. The area of the infarction becomes anemic and pale or white as the part has lost nourishment and may thus undergo necrosis. Thus we have what is called the white infarct. Infarcts may be absorbed, after becoming inflamed,encapsulated,&,but we will have cicatricial tissue marking its site. We also have red infarcts,which color is due to haemorrhage. Thus if an embolus contain bacteria or is infected we will probably have an abscess,whereas if it does not contain infection the infarct is generally absorbed.

(Reference,Stengel's Pathology.) Short quiz after this lect.

Dr. Roscoe Ritter.

Lecture No. 6. November,10th,1903.

Atrophy is the diminution of the tissue and has no mark or sign of disease.

Hypoplasia is the imperfect developement of t the part or a defective formation of the part.

Hyperplasia is the abnormal multiplication or increase of the number of tissue elements.

Etiology:- The causes of atrophy are various. The following may be causes for the same:-

(a) Want of functional demand or functional inactivity.

(b) Disease of the nervous system.

(c) Old age.

(d) Lack of nourishment and pressure.

Atrophy may be divided into physiological atrophy and pathological atrophy. Physiological atrophy is the normal diminution of an organ before general manifestations of old age as the atrophy of the thymus-gland in early child-hood and of the genital organs at the menopause. Thus it is due to cessatio of function.

Pathological atrophy is where the catabolism is greater than the anabolism. Functional inactivity may cause atrophy as paralysis.

Atrophy may again be divided into simple

or true atrophy and numerical atrophy.

Simple Atrophy or True Atrophy is the shrinking of the part without a relative change of the parts and presents no manifestation of disease.

Numerical Atrophy is the shrinking of the parts with a change in the relations of the parts and in the number of the cells. The number of the cells being diminished and generally become degenerative. This process is generally most marked in the parenchyma of the organ and does not as a rule disturb the connective tissue as the connective tissue may even under go hyperplasia. However it may degenerate in the later stages of the disease. In atrophy the function of the organ is generally impaire In simple atrophy the color of the cells may be-come of a brownish tinge as the coloring matter of the cell is not diminished but only condensed. However Brown Atrophy is the shrinking of the tissue - the diminution of the cells and the deposition of pigment in the same, the diminution of the cells relating not to the number but as to their size. The heart and lungs are the organs most commonly affected as stated above.

Degeneration is a chemical change in the cell.

Infiltration is different fron the above as it is generally a mechanical deposit in the cell by circulation.

Cloudy Swelling:-

Definition:- Cloudy Swelling or Albuminous Infiltration or Parenchymatous Degeneration is edema of the protoplasm of the cells,changes being brought about in the proteid of the protoplasm,which causes an opacity. Cloudy Swelling is a result of inflammation and fever may cause the same.

Causes:- I - Intoxication,either by bacterial toxins or by organic or inorganic substances.

2 - By poisons.

3 - By starvation or by over feeding.

Characteristics:- Cells become swollen and much increased in size and very opaque. The cell walls become very indistinct,but the nuclei generally remain unchanged as they seldom degenerate in simple cloudy swelling. The protoplasm is filled with granules. These cells may recover but may die and be thrown off.

Fatty Infiltration:-

Definition:- Fatty infiltration is not a degeneration,but is a deposition of fats,taken from the circulation, into the cells which do not normally possess the same or is a deposition into those cells which do contain fats,but in abnormal quantities.

Causes:- The use of alcohol causes fatty in-

filtration and generally is followed by diabetis and sclerosis. May also occur during pregnancy.

Seats:- Generally this occurs in subcutaneous and subserous tissues, in the mesenteries and omentum, along the ~~fas~~ fasciae between the muscles and in the kidney liver and heart. The lungs and central nervous system being seldom inflicted.

Fatty Degeneration:-

Definition:- Fatty degeneration is the conversion of cell protoplasm into fat.

Causes:- This often follows cloudy swelling and is generally brought about by poisons as Hg P Pb & As. Thus causing a chemical alteration in the protoplasm of the cells.

Occurs:- Fatty degeneration may occur in any tissue and especially in the liver, kidney, heart & central nervous system. Das Ende.

Lecture No. 7. November,17th,1903.

Degeneration:- There are several forms of degeneration,which are closely allied. The most important is amyloid or lardy degeneration. It is found in supperation and ulceration. Other conditions favorable to it are tuberculosis of the lungs and skeleton and syphilitic ulceration. Organs affected become larger and paler,the cut surface glistens. The size of amyloid degeneration varies. The intima and media of blood vessel are affected,rarely the adventitia. It is not found in epithelium but is found in lymph channels,muscle cells,&. It has pecular staining qualities,staining light pink or red with gentian violet. The kidney,liver,spleen and large blood vessels are affected in the order mentioned.

Hyaline degeneration is the change of protoplasm to a gelatinous substance. It is found in small blood vessels,muscle fibers,interstitial substance,blood platelets and leucocytes. It stains deeply with eosin.

Mucoid degeneration is the conversion of cellular protoplasm into mucin. It is found in epithelium and in inflammatory processes in the different tumors.

Colloid degeneration is simular to mucoid.

Glycogemic degeneration or infiltration is found normally in the liver cells,abnormally in the blood current,

leukocytes,muscle fibers,&. It occurs in small globules,soluble in water and found in diabetes.

Serous or dropsical infiltration is really edema. It is found in tissue which has become edematous.

Calcification is a deposition,either in cells or intercellular substance,of large or small granules composed principally of phosphates and carbonate of lime. The tissue affected becomes hard,brittle and white. Calcification usually takes place in dead tissue. Seats of this are the valves of the heart and the walls of the blood vessels,the blood vessels being called pipe-stem arteries,and muscles of the heart. Old scars may become calcified.

Pigmentation is the abnormal presence of coloring matter in the tissues. It may be introduced from without; it may be the result of cell activity or metabolic; it may be produced by the blood - haemetogenous; it may be derived from the bile - hepatogenous.

If Ag,Hg,either be taken into the intestinal tract,they will produce pigmentation. Coal miners inhale dust and the lung tissue just below the pleura becomes pigmented.

Lecture No. 8. November,24th,1903.

Hepatogenous pigmentation is caused by deposit of normal bile in the various tissues of the body. It may be deposited as crystals,plates or in solution. This causes a disease known as jaundice. It is first noticed in the eye,then in the skin and in mucous membranes. The color is from a yellow to a dark hue. Necrosis:- Necrosis is the death of a certain circumscribed portion of tissue. It may be caused by insufficient nutrition,cutting off of the blood supply,that is by embolus,thrombus,venous stagnation; by poisons,either chemical or metallic,by mechanical means,such as pressure and by heat and cold.

Coagulation necrosis is simular to hyaline degeneration. Chemical irritants or toxic substances will cause coagulation necrosis. Tissue affected with coagulation necrosis is firm and waxy.

Cheesy degeneration or caseation is applied to the form of degeneration in which the dead tissue elements loøse their normal structure and are changed into an irregular granular albuminous and fatty material. Caseation occurs in tissues which are in the condition of coagulation necrosis and in tissues which have lost their vitality. It is also found in tubercle,pneumonia, tumors and sphylitic lessions.

Fat necrosis is the death of adipose tissue an

and is usually associated with the diseases of the pancreas. The lessions are small and pale.

Haemolysis is necrosis of the blood corpuscles. When death of a considerable area takes place, the condition is called gangrene. There are two kinds of gangrene, dry and moist. In the former the tissue becomes dry and hard and brown and black. In the later the part becomes moist, soft and infiltrated with foul gases, if putrefactive bacteria be present. The part also becomes discolored. Thrombi or embolii in lungs may cause gangrene of the lungs

Lecture No.9. December,Ist,1903.

Inflammation:-

Definition:- Inflammation may be designated as the vascular,exudative,degenerative and regenerative changes which occur in the living tissues.

Causes:- This may be caused by chemical, mechanical or thermal agents. Also by micro-organisms.

Phenomena:- The first changes in inflammation is the enlarging of the arteries,which is done immediately after the agent,whether mechanical,thermal,chemical or bacterial agent,has acted upon the part. However this is only momentary as the arteries,capillaries and veins will then become contracted in the order as mentioned above. The contraction is not due to the nerve control as was once thought but lies in the blood vessel wal walls themselves. The blood current is at first more rapid,then approaches normal,then becomes very slow and may come to an actual stasis. As the current slows the leukocytes become more numerous and adhere to the vessel walls,thus lining the same. They then escape between the endothelial plates of the vessels and circumscribe the vessels and then they wander into the surrounding tissues and seek the place of injury. Then red blood corpuscles may pass through the vessel walls and then plasma follows and infil-

trates the tissue. This is followed by proliferative changes in the surrounding connective tissue and the surrounding lymph channels are filled with round cells which are newly formed connective tissue cells and leukocytes.

Diapedesis is the escape of red blood corpuscles from or through the vessel walls.

Leukemia is the multiplication of leukocytes.

Types of Inflammation:-

Ist:- Edematous or Serous Inflammation is where a large Quantity of plasma escapes and not so many leukocytes or cellular matter. This plasma used to be called coagulated lymph.

2nd:- Fibrinous Inflammation is where the plasma clots or where the plasma and leukocytes may form a fibrinous mass. 3rd:- Diphtheritic Inflammation is an inflammation which has a false membrane as in diphtheria. This membrane is due to coagulated plasma on the surface and lodgement of the leukocytes thereon.

4th:- Suppurative Inflammation is a very profound inflammation. Here there is a large amount of plasma and leukocytes escaped from the vessel walls. These degenerate and the cells liquify. Bacteria are usually the cause of the degeneration but not always however as croton oil or turpentine may cause the same.

Abscess:-

Definition:- When suppuration occurs in a tissue we have what is known as an abscess. An abscess is a collection of pus,which varies in its properties,surrounded by proliferative tissue and the round cells are numerous. This condition diminishes as we go from the center until normal tissue appears. An abscess softens the tissue in the direction of least resistance and tends to break on the surface through a simus.

Ulcer:-

Definition:- An ulcer has the same histological structure as an abscess only it is open and has no covering. The pus is exposed and the pyogenic membrane lies beneath.

Muco-purulent or Catarrhal Inflammation is the inflammation of the mucous membrane. The muco-pus is the degenerated leukocytes or pus plus mucous.

Adhesions:-

Definition:- Adhesions are the growing together of two or more serous or mucous membranes. Adhesions follow inflammation of the serous membranes and occur much in the same manner as wounds heal. Adhesions are caused by the plasma being thrown out from the serous membranes and the coagulation of the same,which unites the two membranes together.

Organization of Clot:-

Organization of Clot:-

Organization of a clot is not the conversion of the clot into connective tissue as was generally believe but the extension and growth of the connective tissue into the clot and thus replacing it.

6th:-Hemorrhagic Inflammation: is where the inflamatory conditions are so great that the red blood corpuscles even escape in large numbers into the surrounding tissues

7th:- Necrotic or Gangrenous Inflammation:depends upon the severity of the irritation and the general health of the individual. It is inflammation followed by the death of the inflamed part.

General Fibrosis is a low grade of inflammation or arterio-sclerosis.

Finis.

Stengel I03 - I20 Del.& Prudden I07 - I27

Lecture No. I0. December,8th,I903.

Repair:- A very short lecture by Dr. Ritter.

(See Stengle Path. & D. & P. Path.)

Lecture No. II. Ritter Jan. 5th,1904.

Parasites:-

Amoeba Coli is a large protoplasmic mass spheroidal in shape and from five to eight times the diameter of a red blood corpuscle,has a granular protoplasm and a vesicular nucleus. It is found in acute and chronic dysentery at the bottom of the intestinal ulcers and may also be found in secondary abscesses also especially of the liver,which may accompany ulcerative colitis.

This parasite is found more frequently in the tropics,where unsanitary conditions exist.

Trematoda (flukes) This is a small,flat,tongue shaped or leaf like worm,having an alimentary track and a discoidal structure on the under surface by means of which they attach themselves. These worms are found in the liver and are more common among the Egyptians.

Cestoda (tape-worm) This parasite consists of a head and a lower extremity,the head and neck being called the scolex,while the segments are called proglottides. The head has hooks and suckers by which it attaches itself to the intestinal wall. These worms have neither mouths nor alimentary canals. They are hermaphrodites,the sexes being united in the proglottides. The oldest and largest segments are fartherest removed from the

head and are frequently cast off. Infection with the worm occurs in the human subject from the ingestion of insufficiently cooked food especially meats,pork. There are many different kinds of tape worms as the beef tape-worms,which are much larger than the pork tape-worms. These attach themselves to the intestinal wall by means of sucking discs. The pork tape-worm attaches itself to the intestinal wall by the means of both hooks and suckers. The fish tape-worm is very rare and is very large.

Nematoda (round worms) :- These are generally found in children. Ther are cylindrical,elongated and usually pointed at the ends. Their surface are sometimes smooth and sometimes irregularly beset with hairs and papillae or they may possess longitudinal elevated striae or transverse rings. W However the body is not segmented. There is a mouth at the anterior portion and a ventral anus at the posterior extremity,the intestine is straight and in most forms the sexes are distinct,the male generally being smaller than the female.

Oxyuris Vermicularis (threadworm or pin-worm)

This species is very small. The female has a pointed tail and is about Icm long. The posterior of the male,which is about 4mm long, is blunt and after death is somewhat curled. This parasite is very common in children and may be present in large numbers in the

colon. This worm is found only in the human subject and ingestion or infection oc urs by taking the eggs into the alimentary tract. These may be found in fruits,&.

Trichina Spiralis. The female of this common parasite is,in the matured condition,about 3mm long,the male being from I.5 to I mm long. They are filiform in shape and white in color. In-fection occur in man fron the ingestion of insufficiently cooked pork. These parasites are killed at a comparatively low temperature,55 degrees C.

Filaria Sanguinis Hominis,(blood-worms). This is a small thread like worm found in the blood and lymph current. It is less in diameter than the red blood cell. This worm often causes elephantiasis. One of the embryonic stages of developement of this worm is believed to take place in the body of of a species of nocturnal mosquito,which are liable to fall into t the drinking water and thus be carried into the system.

Sarcoptes Hominis,(itch insect). This parasite is shaped somewhat like a turtle with a chitinous covering upon it. The female is about .45 mm long and the male a little smaller. This parasite bores little tunnels in the skin in which the eggs are laid and the young hatched. After a few

days these bore new channels in the skin. For their detection a bit of the superficial layer of the skin is clipped out with a pair of curved scissors. This specimen is dehydrated and cleared up with the oil of cloves and examined under the low power of the mic microscope. If the parasite is present the tunnels and the parasites will be readilly seen.

Pediculus Capitis,(head-louse).

This louse is from I to 3 or 2 mm long,the female being slightly the larger.

Lecture 12 & 13 Omitted. Monstrosities.
by Dr. Ritter. No good.

Lecture 14. Feb. 2. Dr Ritter did not lecture on this. but Dr Wynn.

Classification of Monstrosities.

I. Hemiterata (slight deformities or deviations form the normal).
- A. Anomalies of Volum/.l.
  - a. Of stature.
    - I. general diminution of stature, dwarf.
    - 2. general increase of stature, giantism.
  - b. Of volum/.l.
    - I. Local diminution affecting,
      - I/I. region, (as limb).
      - I/2. system, (as nervous system).
      - I/3. organ, (as undeveloped breast).
    - 2. Local increase affecting,
      - I/I. region.
      - I/2. system.
      - I/3. organ.
- B. Anomalies of form.
- C. Anomalies of Color.
  - a. deficiency of color.
  - b. excess of color.
  - c. alteration of color.
- D. Anomalies of Structures.
  - a. deficiency in consistency.
  - b. excess in consistency.
- E. Anomalies of Deposition.
  - a. by displacement.
    - I. of splanchnic organs.
    - 2. of non-splanchnic organs.
  - b. By Change of Connection.
    - I. anomalies of articulations.
    - 2. " " implantations.
    - 3. " " attachments.
    - 4. " " branches.
    - 5. " " openings.
  - c. In Continuity.
    - I. anomalies of imperorations.
    - 2. " " union of organs.
  - d. By Closure.
  - e. By Disjunction.
    - I. anomalies of perforations.
    - 2. " " divisions.
- F. Anomalies of Number and Existance.
  - a. by numerical defects.
  - b. by numerical excess.

II. Heterotatic. (deviation or transposition of some internal organ from normal position,as heart fron left to right side.)

III. Hermaphroditic

A. True Hermaphrodites,(fishing worm example).

a. bilateral hermaphrodites,(organs on both sides).

b. unilateral " (organs on one side).

c. lateral "

B. Pseudo-hermaphrodites.

a. male pseudo-hermaphrodites,(possesses testicles).

I. internal pseudo-hermaphrodites

2. external " "

3. complete " " (both internal & exter.)

b. Female pseudo-hermaphrodites.

I. internal " "

2. external " "

3. complete " "

IV. Monstrosities,(great deformities).

Reference:- Hirst's & Piersol's Book on "Human Monstrosities".

Lecture No. I5. February,9th,I904.

Infective Granulomata:-

Infective granulomata are found in tuberculosis, lupus,syphilis,glanders and actinomycosis. They are tumor like growths associated with inflammatory processes;many of them being incited by plant parasites.

Tuberculosis is the most important disease in which granulomata occur and may be disseminated in many ways as, by the blood,lymph and bronchi. It may affect any tissue as the vocal chords,tongue and some times the skin. Tuberculosis of the bowels is generally secondary,the primary seat of the disease being in the lungs. This infection is usually carried to the bowel by the patient swallowing the sputum. On account of the antiseptic juices in the stomach this organ seldom becomes affected. The secondary infection usually takes place in the intestines. In tuberculosis of the bone the infection is to them by the blood stream. Lupus:- Lupus or tuberculosis of the skin most frequently occurs in the skin on the face,but it may occur in the mucous membrane of the mouth and in the skin on any other portion of the body. Lupus is rarely seen in America but is common in Austria,Sweden and Germany.

Syphilis:- Syphilis is considered a germ disease,altho the germ has not yet been demonstrated. The primary

lesion of syphilis is called a chancre.

Pathology of Syphilis:-

The round cells of infiltration are deposited around the blood vessels and affect the medium and the smaller vessels. The blood vessels diminuish in size,that is the lumen does,due to the thickening of the intima. This decrease in the lumen of the vessel diminishes the flow of the arterial blood causing the blue color of the chancre. The vessel walls become affected,the endothelia plates become irregular,the leucocytes wander out,the syphilis poisons are blue.

Adenitis is inflammation of the glands. The gland first changes its shape,form bean shape to round,due to the round cell infiltration. The gland becomes very hard. In primary adenitis the infection is in the glands of the loin,while in secondary the infection involves the entire system,glandular system. The primary stage is marked by the chancre and the secondary by the enlarged glands and the eruption. The third stage is called the tertiary or gummata stage. The mucous patches or the plaques in syphilis are the eruptions in the mucous membranes. On account of the accumulation of leucocytes they appear white in color. Trauma causes lesions. After two years the lesions are of a peculiar nature,appearing as gummata or tubercular lesions,however there are no tubercle bacilli present in these lesions. The presence

or abscence of the tubercle bacilli often enables one to differentiate between tuberculosis and syphilis. The size of a gummata is from the size of a pea to that of a large nut. The tubercles of tuberculosis are small while those of syphilis are large. They may appear any where in the body.

Lecture No. I6. February,I6th,I904.

Tuberculosis:-

In the lower animals tuberculosis is subject to variation. It is very prevailent among cattle. If tubercular sputum be injected into the lower animals they will acquire the disease. Actinomycosis,(lumpy jaw). This is a vegitable growth known as ray fungus and is common among cattle. It is considered an infectious disease and not a tumor. It occurs in small masses,which contain calcareous matter,pus,&. If pus taken from lumpy jaw be examined under a microscope,it presents the ray fungus appearence.

Molluscum Contagiosum is a tumor like growth about the size of a pea. It occurs most frequently in the skin of the face and forehead. It is contagious and may spread over the entire face. Curettement or cauterization destroys them.

Leprus or leprosy is due to the bacillus lepra, which takes a simular stain to that of the tubercle bacillus. It is charcterized by the developement of nodular and some-times difuse masses of tissue,consisting of larger and smaller cells of various shapes. This is formed in the exposed parts of the skin, as the face,hands,feet,but it may occur in other parts of the body. These nodules vary in size from the size of a pin head to that of a large walnut and may occur singly or in masses. In time the

nodules will form ulcers. In the primary lesions of leprosy bacilli are found,mostly in the cells,but they may be found free in the intercellular substance. They are some-times found in the skin,mucous membrane of the mouth and larynx,in cartilage,in the testicles and in lymph nodes. Some-times the cells contain but few bacilli but they are generally crowded with them.

Lecture No. I7. February,23rd,I904.

Immunity is the condition of the body as a whole or of its organs,whereby it impedes and resists the developement of infections and morbid processes. Immunity may be divided as follows:-

I. Natural Immunity is the natural resistance which the tissues or the system may offer against an infectious or morbid process.

2. Acquired Immunity is that derived from a previous attack of the same disease or from a modified form of the same,or it also may be produced artificially. Artificial Immunity is that produced by the innoculation,with the virus of the same disease,or from an animal having recovered from that disease. Acquired immunity is divided into active and passive immunity.

a. Active Immunity is the immunity which follows the attack of a certain disease,which secures immunity for the same or it follow the inoculation of a virus weaker than is necessary to cause the typical disease.

b. Passive Immunity is the effects derived from the introduction of a serum into the system,which has been obtained from some animal,which has had the disease or is immuned from the same and it is thought that this chemical substance or anti-toxin in the animal's blood will neutralize the toxin in the persons in whom it has been injected, Thus causing immunity.

Racial Immunity is a division of natural immunity and is the insusceptibility or capacity for resistance to infection or its effects offered by a certain race.

There are many theories offered for the explanation of immunity,but they will not enumerated and discussed here. See:- Coplin's Pathology. Delafield & Pruddens "Pathological Anatomy". Stengel's Pathology.

Phagocytosis is the power of the leucocytes to englobe and destroy bacteria. Thayer's Pathology p.I2I. Thus the phagocytes and the process of phagocytosis work against the progress of disease

A Phagocyte is a cell 'possessing the power of absorbtion, the amoeboid leucocytes being phagocytes. Phagocytes are derived from the endodermal and mesodermal tissues.

An Infectious Disease is one caused by the entrance into the body and the proliferation therein of pathogenic micro-organisms.

Infection is the process by which such a disea disease is caused.

See next page for definitions of Technical terms + etc.

Phagocytes can engulf the gonococcus and tubercle bacillus but they cannot digest them. The phagocytes may some times help to spread a disease rather than to check the same as is notable true in tuberculosis. The phagocytes are limited to the wandering corpuscles of the blood as the endothelial cells which line the blood vessels, the lymph channels and cavities and also the cells which line the heart cavity and even some of the connective tissue cells. John Hunter was the first man to describe the chanchre and was the first man to descover that the blood, lymph and protoplasm had an antiseptic power and had a tendency of impairing or destroying the disease. This is not always true however.

Precipitin:- If the serum of a dog be injected into a rabbit and then take serum from the rabbit and serum of the dog and mix them together we get a precipitate called precipitin.

Hemolycin:- If the red blood corpuscles of the dog be injected into the rabbit, then inject the rabbit serum into the dog the red blood corpuscles of the dog are precipitated.

Bacterialicin is the term applied if bacteria are used instaed of red blood corpuscles.

Disintergration of ferments is termed anti-enzimenis and collectively are called anti bodies.

Lecture No. I8. March,4th,I904.

Blood. The most important elements of the body are the red blood corpuscles. The size of a red blood corpuscle is about seven microns,however they vary some-what in size; some are called megalocytes,which are the large ones,while the small ones are called microcytes.

Artificial Deformation. In saliva and urine the corpuscles swell and are decolorized. Crenated cells have an irregular border and are not round or disc like. This effect can be produced by the use of salt solution and other reagents.

Vacuolation. In staining the red blood corpuscles,vacuoles are some-times found in the cells and are often mistaken for parasites. The normal red blood cell is disc shape.

The effect of age on red blood cells. At birth the number of red blood cells may be about 5,000,000 to the c.c., but soon after birth this number decreases. Foods and liquids modify the number of the red blood cells,as liquids taken into the body will decrease the bulk of the blood,but will increase the number of red blood cells. Diarrhea will decrease the number of red blood cells.

Pathological Changes.

Polycythemia is a term applied,when the number of red blood cells is increased above the normal,as in cholera.

Oligocythemia is applied when there is a reduction of the red blood cells below the normal. This occurs much more frequently than the former. Should the number of red blood cells fall below 500,000,oligocythemia will prove fatal. All of the infectious diseases will reduce the number of red blood cells.

Megalocytes are more frequent in diseased condition.

Porkilocytosis is pernicious anemia. In the redblood corpuscles the affinity for eosin and acid stain is strong,but all will not stain uniformly. The normal condition of the redblood cells is that they are nucleated,but at birth there are no nucleated cells. In disease some may become nucleated. The nucleated cells are divided according to their size into three sizes as follows:-

I. Microblasts --------- size of a microcyte.
2. Normoblast ---------- average size.
3. Megaloblast --------- size of a megalocyte.

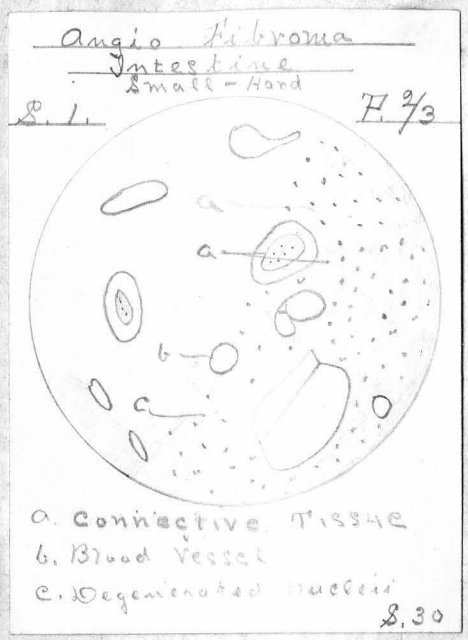
Conditions in which the above are seen is in leukemia,secondary and pernicious anemia. The leucocytes vary in size and are usually three times the size of the red blood cell. Lymphocytes are produced in the lymph vessels. The lymphocyte is a large nucleated cell about the size of a mononuclear leucocyte and they possess phagocytic power. The number of white blood corpuscles is about 6,000 to a mm of blood. There is an increase of white blood corpuscles after eating. An increase to I2,000 is called leucocytosis and this accompanies many infectious diseases,

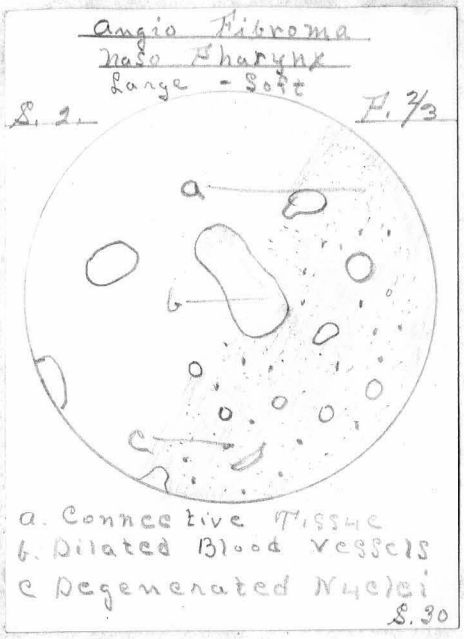
Lecture 19. Mar. 8. Blood.. } omitted
" 20. " 15. Malaria. } no time.
" 21. " 22. Malaria. } By Dr. F. Wynn.

as in pneumonia,&,but not so in typhoid fever anf tuberculosis. The number of blood platelets to a mm of blood is 250,000. They stain slightly and there size is about one third that of the red blood cell. The occur in masses.

F I B R O M A

A n g i o - F i b r o m a.





Angio-fibroma:-

Definition:- An angio-fibroma is a tumor composed of connective tissue cells and fibers simular to fibrillar tissue in which are numerous blood vessels,which are dilated.

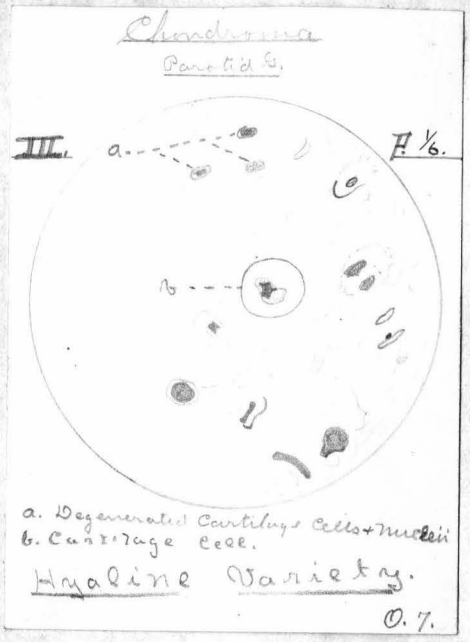
Angio-fibroma tumors are benign but may recur if not entirely removed. They are generally encapsulated.

They are common in the gastro-intestinal tract, in the abdominal organs,in the respiratory tract and in fact may occur any place where there is fibrinous tissue.

Fibroma is divided into hard and soft fibroma, they being hard as long as fibrous tissue predominates and becoming soft when degeneration takes place.

C H O N D R O M A

P a r o t i d G l a n d.



Chondroma:-

Definition:- A chondroma is a tumor composed chiefly if not entirely either of the hard or soft variety,but more commonly of the hard variety.

The causes of condroma are heredity,remnants of cartilage left in abnormal places,irritation or trauma. There are two kinds,viz:- Ist- cartilaginous out-growths,(echondroses or ecchondromata) & 2nd - chondromata.

Chondroma may appear in muscles,lungs,mouth , mammary glands,pleura,ovaries & testicles. Those of the hyaline variety are the most common and generall occur in the parotid gland. They are benign but may be carried by metastasis.

K E L O I D .

(cheloid)

Keloid:-

Definition:- A keloid,(cheloid),is a variety of fibromata and is composed of dense fibrous tissue,containing few cells.

It developes in old cicratrices or scar tissue and is a flat and slightly lobulated mass. It has not been definitly determined whether keloids are tumors or formations due to inflammation.

Some think they are caused by friction or pressure,but no definite conclusion for their cause is known.

S A R C O M A .

Sarcoma:- (See drawings on following page)

Definition:- A sarcoma is a connective tissue growth in which the cells constituting the tumor fails to reach full maturity. The round cells are the lowest or the embryonic or youngest cells of the tumor and resemble at first the round cells of infiltration, inflammation or of repair. The round cells change from the round cells to the spindle cells and thence to stellate cells.

Classification:- Sarcoma:-

1-Round cell Sarcoma:- Small / Large

2-Spindle cell Sarcoma, (small & large)

3-Mixed cell Sarcoma:- (round & spindle)

4-Giant cell Sarcoma.

Sarcoma is almost always abundantly supplied with blood vessels, which are immatured. Thus we may have hemorrhage occuring sarcoma which is designated by the dark brown spots. Sarcoma as a rule generally occur in the young and is caused or is helped by violence, while carcinoma is mostly confined to adults. This is not always true however but is the generall rule.

The more matured the cells in sarcoma th less the malignancy while the less matured cell are more malignant. The cells vary greatly both in shape and size.

Appearance:-

Sarcomata are generally more or less rounded tumors and are generally encapsulated,however this is not always the case. They may be either hard or soft according to the amount of intercellular substance or to the number of cells.

Seats:-

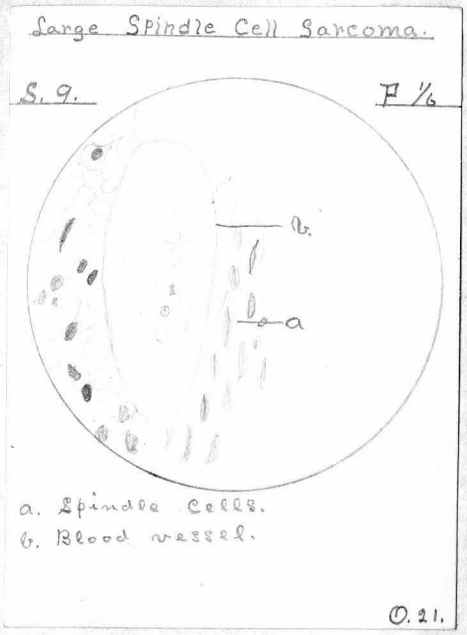
Sarcoma developes from pre-existing connective tissue and may occur anywhere in the body where connective tissue exists.

Malignancy:-

Sarcoma is malignant as it tends to recur after removal. Spreads by metastasis and affects the general health of the patient.

S P I N D L E C E L L S A R C O M A .

(large)



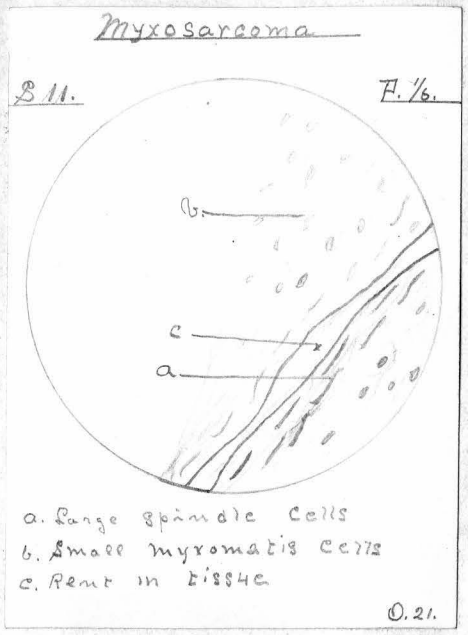
This form may exist in either the large or small shaped spindle cells and seems to be the most frequent type. However the spindle cells only predominate as the round cells are also present but in the minority. If the spindle cells be cut cross ways they will also appear as round cells.

The spindle cell sarcoma does not grow as rapidly as the round cell sarcoma and is less malignant. The smalll spindle cell sarcoma grows very slowly and is the least malignant of any of the sarcoma.

The spindle cell sarcoma occurs in the dense connective tissue as the perioteum,tendons,fascia,&.

M Y X O - S A R C O M A .

(mucous & connective)



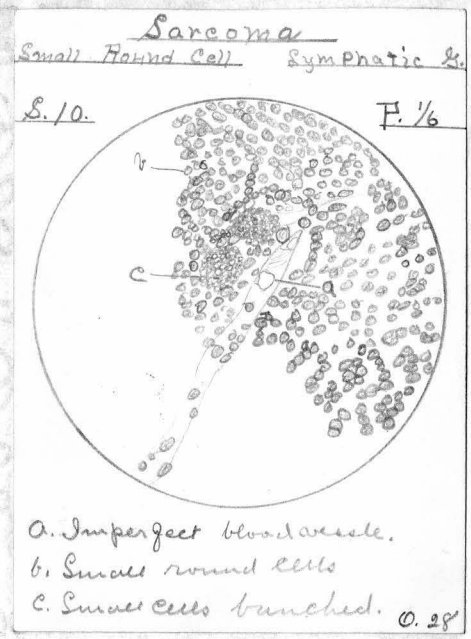
Myxo-sarcoma:-

Definition:- Any sarcoma that undergoes a myxomatous or mucous change is termed a myxo-sarcoma.

Number II is a myxo-sarcoma of the large spindle cell variety. (see description of spindle cell sarcoma.)

ROUND CELL SARCOMA.

(small)



Round Cell Sarcoma:-

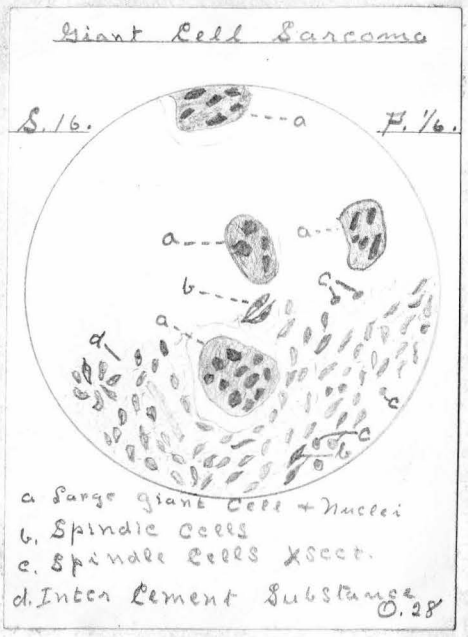
1. Small Round Cell.
2. Large Round Cell.

The Small Round Cell Sarcomata has cells generally about the size of a mononuclear leukocyte and contains very little intercellular substance. Sarcoma generally contain many blood vessels and are generally very filled with small dark brown spots which are due to the hemorrhages that have occured. They are sometimes soft but are generally hard. They occur in connective tissue and especially in bone and are very malignant and fast spreading as a rule. They may and do frequently occur in the bra brain and internal organs.

The cells of the Large Round Celled Sarcoma are generally quite large in comparison to the preceeding type and contain large nucleii,which have several rather large nucleoli. They are as a rule harder and less malignant than the Small Round Sarcoma.

G I A N T C E L L S A R C O M A .

(Myeloid)



Myeloid:-

Definition:- A Myeloid or Giant Cell Sarcoma or a Osteo-sarcoma is one either of the round cell or spindle cell type with the presence of large, some times very large, multinuclear cells resembling the myeloplaques of the bone. The formation of these cells is thought to be due to the rapid nuclear multiplication.

They occur most frequently about the bone, however they may occur elsewhere. They are benign, slow in growth and metastasis is very rare.

M Y O M A.

Leiomyoma.

Myoma:-

Definition:- A myoma is a tumor composed of muscular tissue and are of two types following the two types of muscle fibers :- Striated & Non-striated.

Leiomyoma:-

Definition:- A Leiomyoma is a tumor composed of non-striated muscle fibers having spindle shape cells and rod shape nuclei,which are located in the center of the cell. These in the tumor are usually packed closely together in various directions. Other tissues are generally intermingled with the

connective tissue. If connective tissue is present in large amount the tumor is termed a fibro-myoma.

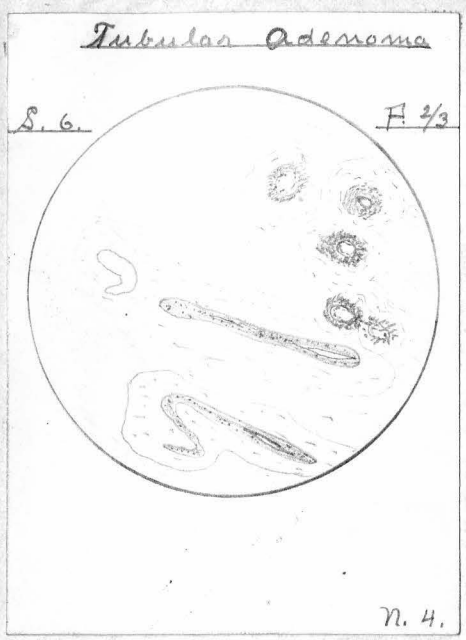
Leiomyoma tumors are usually very dense and hard possessing, if any blood vessels. They often degenerate, forming cysts or becoming gangrenous. They may occur singly or in multiple, may be large or small, are of slow growth and are benign. They may occur anywhere where non-striated muscular fibers are present, which is in all parts of the body. They often occur in the uterus.

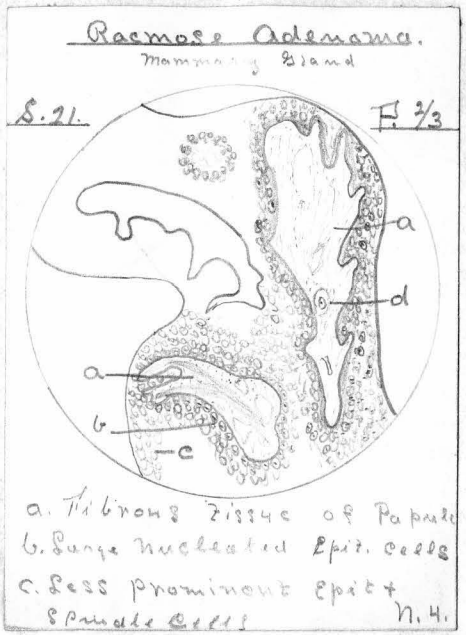
Myoma Striocellulare:-

Definition:- A Myoma Striocellulare tumor is one composed of striated muscle fibers and are very rare. They are generally composed mostly of other tissues, as connective tissue, &. They are rarely found in the typical form.

A D E N O M A .

(adenomata)





Adenoma:-

Definition:- Adenoma is a tumor containing epithelial tissue and generally involves the glands. They are known as gland tumors. Thus they are new growths whose growth resembles a gland and are found near and sometimes involve gland tissue.

Adenoma may occur very extensively. They are generally encapsulated and are unlike glands in so much that they have no ducts nor secretory powers or functional operations.

Adenomas are divided as are glands, viz:- Into racimose and tubular adenoma.

Adenoma :- Racimose Adenoma.
Tubular Adenoma.

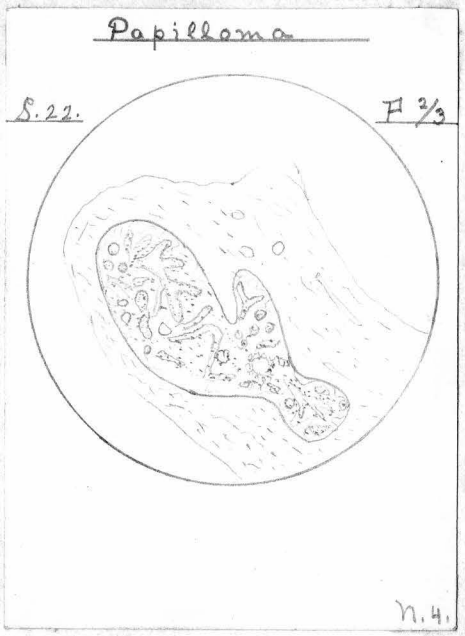
Adenoma and carcinoma ,which are also composed of epithelium tissue,are often hard to be differentiated. A distinct line cannot be drawn;thus we have the Adeno-carcinoma.

The tubular adenoma contain more fibrious tissue than the racemose adenoma. Adenoma are generally benign but there is a variety,which occur in the stomach and the intestines, which are very malignant. If an adenoma is fibrous we then call it fibro-adenoma,if glandular we call it acini-adenoma.

Sometimes an adenoma will degenerate and form a cyst. This generally occurs in the ovaries.

P A P I L L O M A T A .

(papilloma or common warts)



Papilloma:-

Definition:- A papilloma is a special form of fibroma being a papillary out-growth covered, generally thickly, by epithelium.

May occur any place where epithelium is present.

C A R C I N O M A .

(cancer.)

Carcinoma:-

Deffinition:- Carcinoma or cancer is a tumor in which epithelia growths or extensions either in form of solid blocks,or columns,or acini,which are seperated more or less by connective tissue. The epithelial protrussions showing a tendency of extending beyound its normal anatomical limits.

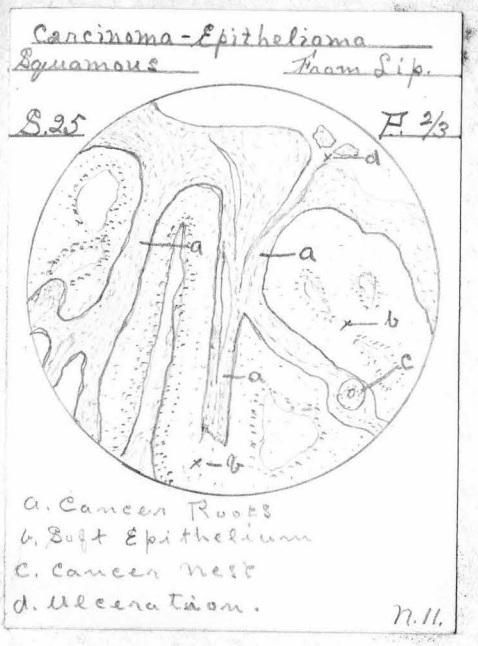
Thus carcinoma are epithelium tumors,which also involve connective tissue. Carcinoma is subdivided thus:-

Carcinoma:-
1. Epithelioma
   a. Squammous. b. Cylindrical celled.
2. Acimous.
   a. Scirrlius b. Encephaloid.
3. Muchoid. or Colloid.

The cause of cancer is not definitely known as some think they are due to traumatism,or can be brought about by heat or cold,or by chemical means. However the latest views o on the subject is that it is due to the misplacement of the epithelial cells or the failure of the same to develope.

C A R C I N O M A E P I T H E L I O M A .

(Squamous - from lip.)



Carcinoma Epitheloioma:-

Definition:- A carcinoma epithelioma is cancer of the skin and mucous membrane. These are generally covered with squamous epithelium.

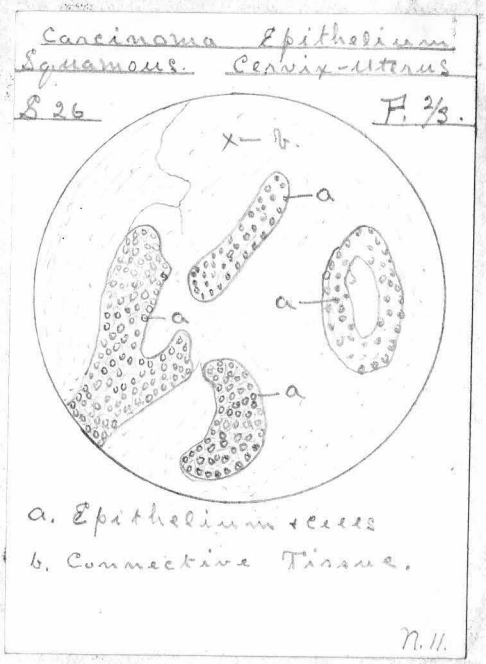
These occur most frequently where the epithelium comes in connection with the mucous membrane as the lip,naso-openings,eyelids,labia and glans penis. They may however occur in the mouth,oesophagus,&.

These are generally very malignant and generally occur in older people.

(for complete description see page before)

C A R C I N O M A E P I T H E L I U M .

(squamous - cervix-uterus.)

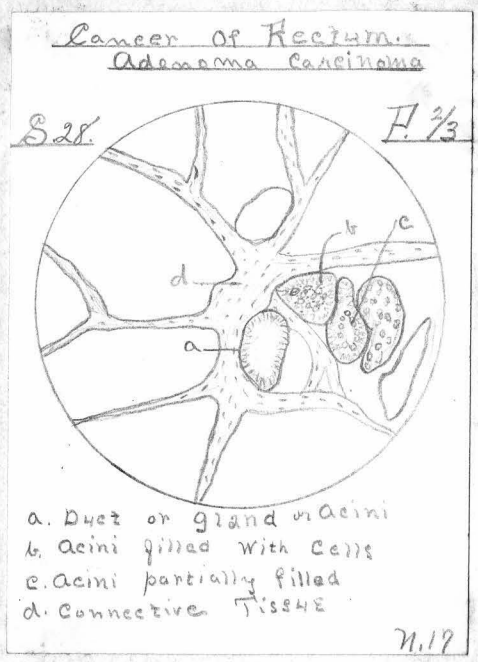


Carcinoma-epithelium:-

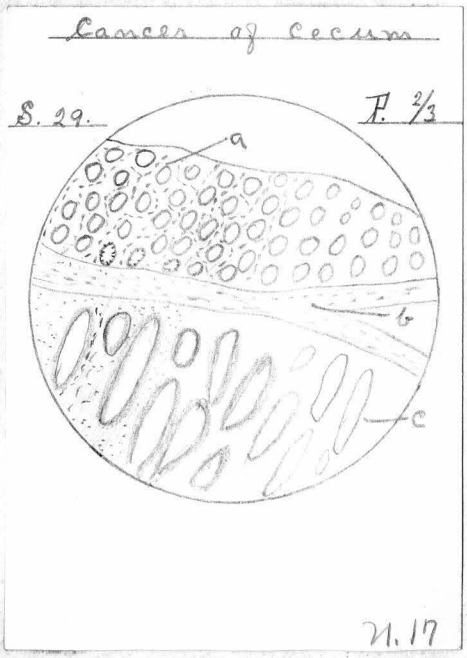
Definition:- Carcinoma of the uterius is the affectation of the epithelium cells in the uterus. Cancer of the uterus generally begins in the cervix of the uterus and the most common is the epithelioma.

C A R C I N O M A A D E N O M A .

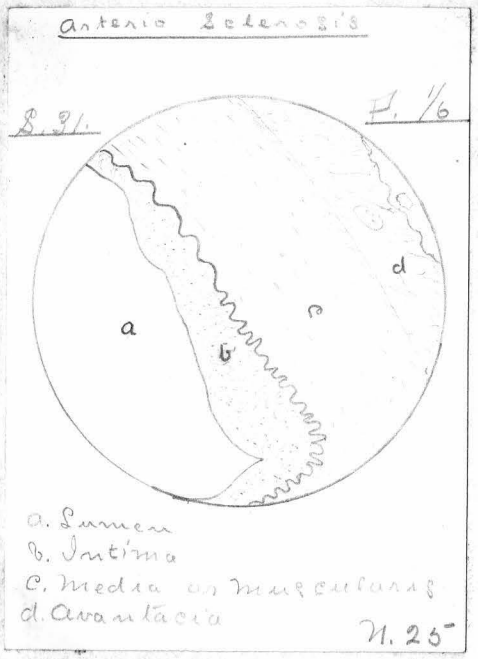
(cancer of rectum.)



Cancer of Cecum.



A R T E R I O S C L E R O S I S.



Arterio-sclerosis:-

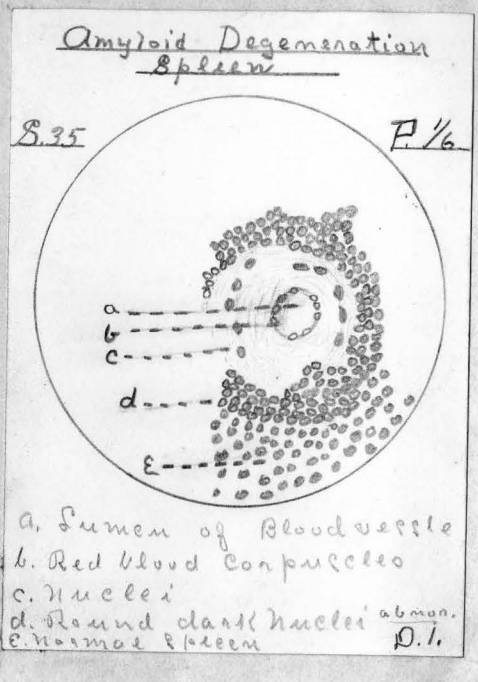
Definition:- Arterio-sclerosis is a chronic pathological change in the artery, the changes being productive and degenerative in character, which bears especially upon the integrity of the vessel walls and also affecting the circulation.

Arterio-sclerosis is best shown in the radial artery. The intima coat of the artery is the one affected. The causes of arterio-sclerosis are dissipation, over activity, syhplis, use of alcohol and old age. The developement is uniform or else it may be nodular and hardening may occur in the circumscribed areas. The area may become degenerated allowing calcification to take place. This makes what is known as an atheromatus

plate. The focus may soften by degeneration and discharge into the lumen of the vessel, leaving a necrotic, ulcerated area, called an atheromatus ulcer. Calcerious change takes place and the surface may be covered with thrombotic fibrinous deposits.

A M Y L O I D D E G E N E R A T I O N .

(spleen)



Amyloid:-

Definition:- Amyloid degeneration is the process in which the basement membrane of connective tissue is involved, especially the walls of arteries. They first become swollen and thickened and then they change into a glass, firm, translucent and colorless material, which is albuminous in character.

It most frequently occurs in the small arteries and the capillaries, the lumen being encroached upon by the swelling. Also occurs very often in the intestional connective tissue. Occurs most generally in the kidney, liver ~~lungs~~, spleen, and lymph nodes. However it may occur in the heart, respiratory tract and in the generative organs.

Pathological Laboratory Notes. 2nd term.

Inflammation:-

Definition:- Inflammation may be designated as the vascular, exudative, degenerative and regenerative changes which occur in living tissue.

Causes:- Inflammation may be caused by chemical, mechanical or by thermal agents; also by micro-organisms.

Classification:- Inflammation is divided into simple and infective inflammation. (Infective is the one considered here.)

Infected Granulomata, or granuloma, used to be classed as tumors but are not so classed at the present time. Infected granulomata includes tuberculosis, syphilis, lupus, leprosy, glanders, &.

Infected Granulomata:-

Definition:- Infected Granulomata is a new nodular formation which is due to some plant parasite.
(This has not however been proven for syphilis)

Tuberculosis:-

Definition:- Tuberculosis is a chronic inflammatory disease. The word tuberculosis means full of tu-

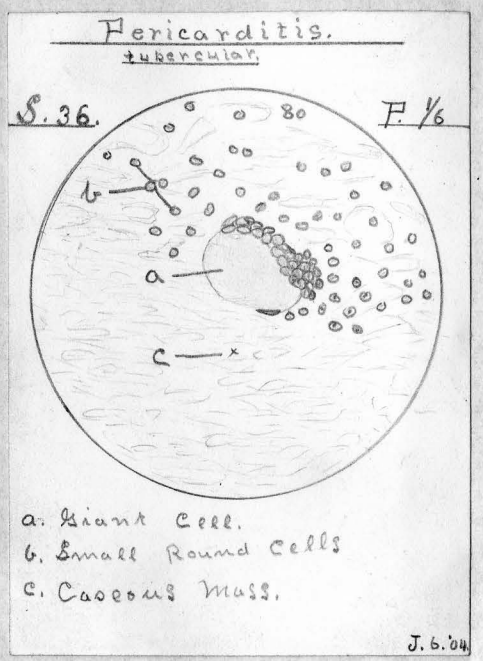
bercles and the word tubercle means a lump,nodule or lobe.

Cause :- Bacillus Tuberculosis. Koch (1882).

The tubercle bacillus first finds a lodgement and if the surroundings are favorable for its growth it will form a tubercle or nodule around itself ranging from the size of a pin head to the size of a pea or millet seed. In the lungs the tubercle cannot be seen at first. They develope in groups,metastasis taking place thro the lymph channels. Where the germ lodges the connective tissue cells become very large and are termed epithelioids,as they resemble the epithelial cells. Surrounding the epithelioid cell are the small round granulation cells. No blood vessels are found in the tubercle but are present at the periphery. The afore-description thus covers the progressive,proliferative or or growing process and this stage ends when that point is reached when the disease does not advance but goes back or degenerates the tissues. The tubercle generates toxines which destroyes the lives of the organisms. This is also hastened by the fact that there are no blood vessels in a tubercle and the cells die of starvation. Thus the cells and the bacteria in the center die but survive at the periphery. The epithelioid cells in tuberculosis are not as typical as the giant cells are in sarcoma,however they resemble them in appearance and tend to be typical to tuberculosis. They generally appear as horse-shoe

shape having a cresent center or nucleus,but do not appear in the first stages. After the afore mentioned stage caseation follows. Phagocytes are present in all stages of tuberculosis and tend to carry off the poisons. They are generally most common at the periphery. One of the changes in tuberculosis is that the small round cells tend to repair and form fibrous connective tissue. This is the natural progressive change if the patient survives. However very often in the case of virulent tuberculosis it spreads so rapidly that it does not give time for the round cells to cage in the tubercular mass.

P E R I C A R D I T I S .
(tubercular)

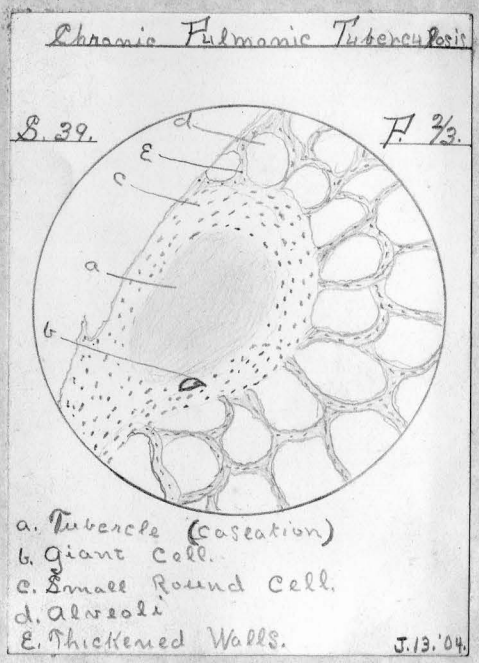


Tubercular Pericarditis:-

Definition:- Tubercular pericarditis is an inflamation of the pericardium of the heart caused by tuberculosis either of the pericardium or by tubercular inflamation in the vicinity of the heart. The latter is the most common

This causes a thickening of the pericardium and the new formed tissue may be either fibrous tissue or caseous. It is generally composed of both if the infection is of long standing. The viseral and parietal layers often become adhesive or grown together and an exudate often accompanies this process.

PULMONIC TUBERCULOSIS.
(chronic)



Pulmonary Tuberculosis, (chronic):-

Tubercular infection of the lungs may occur in any of the following ways:-

Ist. Thro the bronchial tubes, termed bronchogenic tuberculosis.

2nd. Thro the blood vessels, hemogenic tuberculosis.

3rd. Thro the lymph channels, termed lymphogenic tuberculosis.

The first mode is the most frequent manner of infection and exceeds the latter two combined. Bronchogenic tuberculosis may be divided

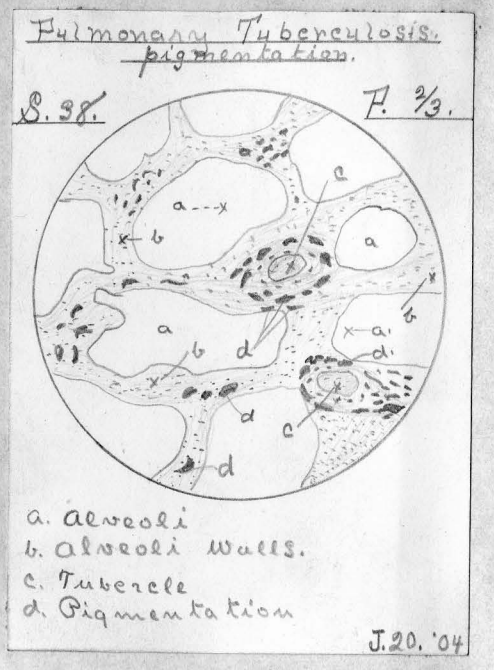
tuberculosis may be divided into the three following forms:-

Ist. acute. 2nd. chronic. 3rd. fibrous.

The second form, chronic, is the most general form of tuberculosis. In-fection is believed in these cases to take place thro the above three enumerated courses and may attack either the old or the young. It generally begins in the apices of the lungs and gradually involves the entire organs.

Stengel Path. p. 477 - 487.

PULMONARY TUBERCULOSIS.



Pigmentation.

Pulmonary Tuberculosis showing Pigmentation of Lungs:-

For notes on tuberculosis see the preceeding notes where the subject is discussed in full.

Definition:- Pigmentation of the lungs is the inhalation of foreign particles into the lungs and the deposition of the same in the lung tissue.

Cause:- The dust particles in the atmosphere and the inhalation of the same.

Pigmentation of the lungs occurs to a certain extent in all persons, irrespective of age or occupation, but is more general and pronounced in older persons and those engaged in dusty

employment. It is also very pronounced in those who are confined in large cities and those who are employed in mining and manufacturing districts. These particles are partly taken up by the epithelium in the air spaces, while some are conveyed by the phagocytes to the interstitial tissues of the lungs. These particles may be taken thro the vascular and lymph systems and deposited in the liver or spleen, but this is very uncommon.

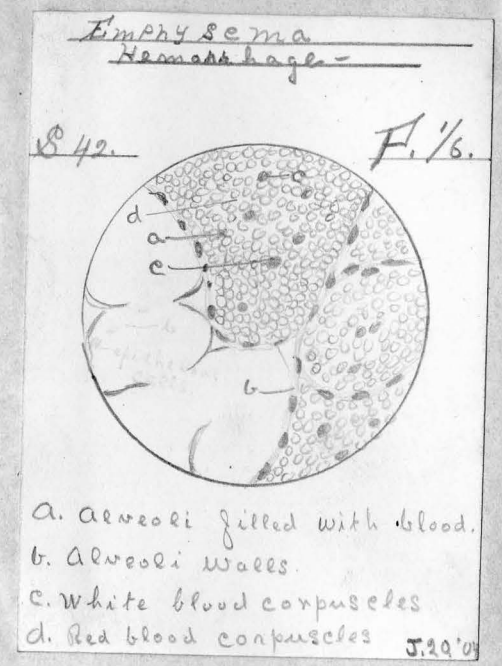
A certain deposit of pigment seems to do no harm, but it naturally lowers the vitality of the lungs, if existing in any great amount, and may produce interstitial pneumonia and other pulmonary disturbances. Pigmentation when due to the inhalation of,

coal-dust is termed --------- anthracosis.
various mineral dusts ------- chalicosis.
iron dust ------------------- siderosis.

Das ende.

D.& P. Path. p.461. Stengle Path. p.471.

E M P H Y S E M A .



Emphysema:-

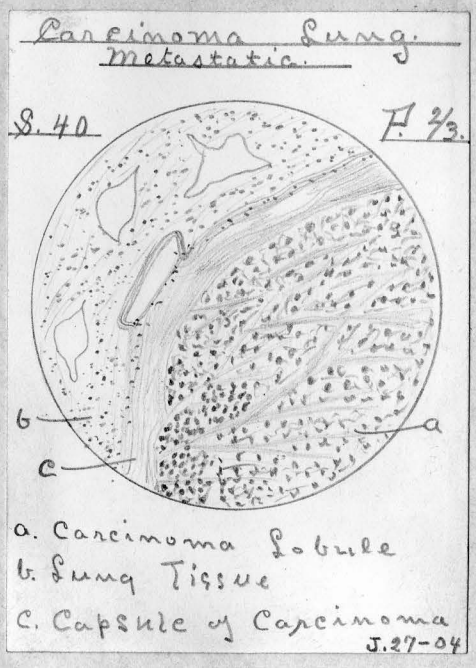
Definition:- Emphysema is the distention of the walls of the air-spaces of the lungs,partially destroying the alveolii walls and diminishing the elasticity of the lung tissue.

Causes:- Whooping cough; chronic lung affections and extensive use of wind instruments.

Varieties:- Acute,chronic,interstitial, senile ,&.

Acute emphysema may be very easily overcome by the removal of the cause,if such can be removed,but the chronic is not so easily governed and checked. Hemorrhages often occur.

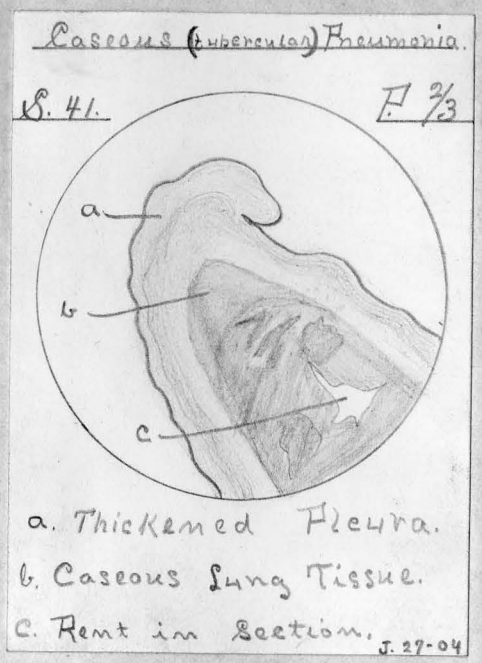
C A R C I N O M A L U N G .
(metastatic)



Carcinoma of Lung:-

Primary tumors of the lungs, as well as of the bronchi and trachea are not common. In fact, in the former especially, they are rare. However they may and do often occur in the lungs secondarily and especially is this true of carcinoma. Carcinoma of the lung may appear as a circumscribed nodule, which will displace the lung tissue or the malignant growths may be infiltrated into the bronchi and the larger vessels. Thus they may grow in the passages and air spaces and fill them up without at once invading the walls of the alveolii.

C A S E O U S P N E U M O N I A.
(tubercular)



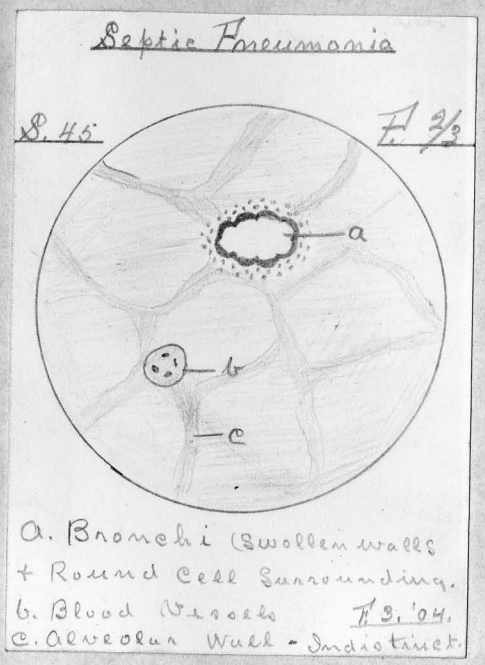
Caseous or Tubercular Pneumonia:-

Definition:- Caseous pneumonia is either a lobular or lobar inflammation of the lungs due to the tubercle bacillus.

Cause:- Tubercle bacillus.

In caseous pneumonia,or pneumonia desquamative, the cells lining the air passages,or vesicles,go thro the process of desquamation,or falling off and the connective tissue cells of the septa between the air passages proliferate and a albuminous fluid is exudated. This exudate by the action of the bacteria on the same,changes into a caseous degeneration. Thus tubercle bacilli are the cause of the disease.

S E P T I C P N E U M O N I A .



Septic Pneumonia:-

Definition:- Septic pneumonia is caused by the inspiration of septic materials or by septic embolii.

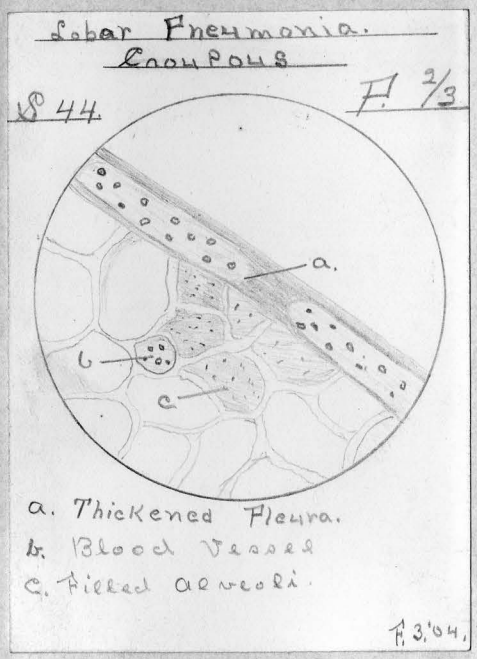
It is a form of lobular pneumonia and may occur in children right after birth, due to the inhalation of the maternal fluids during labor.

Cause:- By the entrance of septic material into the lungs, either direct or indirectly.

This will be completely discussed in thesis. See thesis.

L O B A R P N E U M O N I A .

(croupous)



Lobar or croupous pneumonia:-

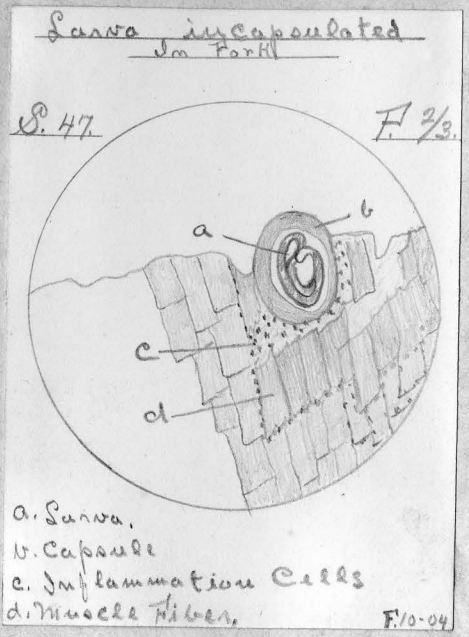
This is the most common form of pneumonia and may occur in either the old or the young.

SEE THESIS FOR FULL DISCUSSION.

I N C A P S U L A T E D L A R V A .

Cestoda, Taenia Solium.

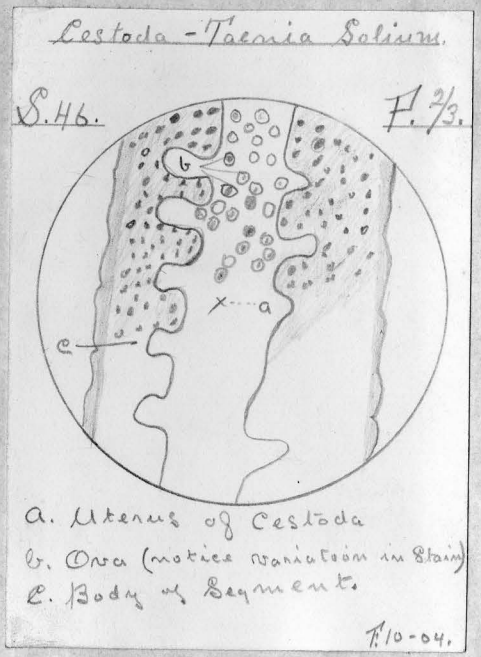
In pork.



Taenia Solium - Cestoda - (tapeworm.)

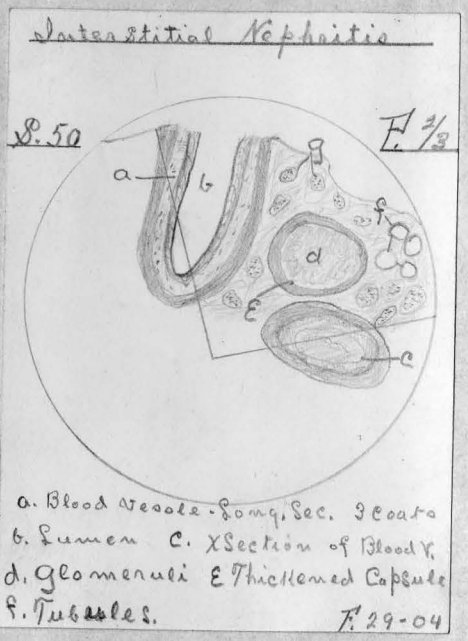
For description see lecture notes on same.

CESTODA, TAENIA SOLIUM.
(tapeworm)



See lecture notes on same.

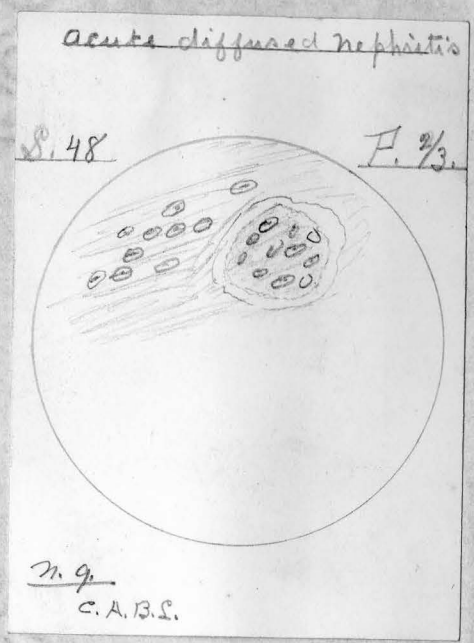
I N T E R S T I T I A L N E P H R I T I S .

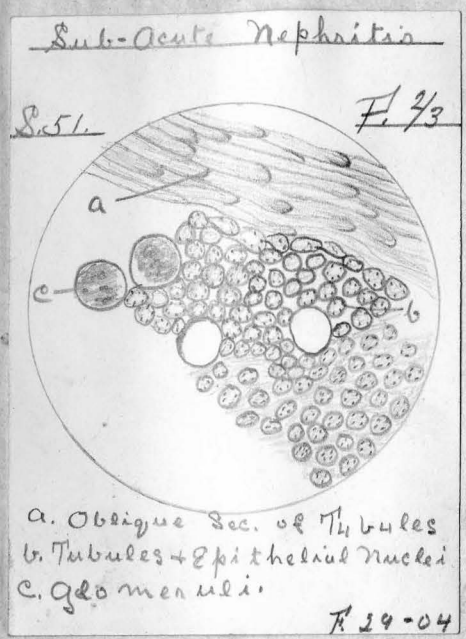


Interstitial Nephritis.

Interstitial nephritis is a type of chronic difuse nephritis in which there is a conspicuous growth of interstitial tissue. This may be due to chronic congestion or associated with arterio-sclerosis, but it more frequently an independent process. The new formed interstitial tissue may occur in patches or in streaks about the course of the interlobular vessels. The epithelium of these affected portions may be flattened and will undergo atrophy. The epithelium and tubules may be completely destroyed.

SUB-ACUTE NEPHRITIS.





Acute Nephritis.

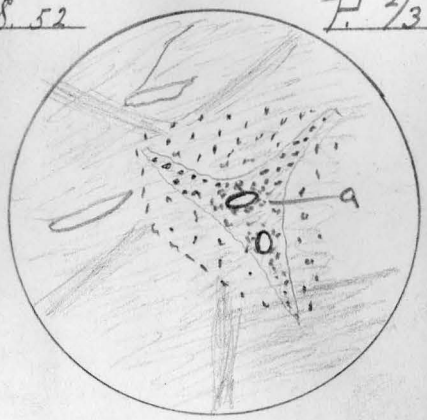
The cause of acute diffused nephritis is some acut infectious disease such as scarlatina, diptheria, typhoid fever, malaria, &. Irritants such as turpintine will also some times cause the disease. Types.

1. Glomerular type.
2. Parenchymatous or degenerative type.
3. Haemorrhagic type,
4. Exudative type.
5. Interstitial or productive type.

For full description of the above mentioned types see Stengel's Pathology.

Acute Hepatitis

S. 52 F. 2/3

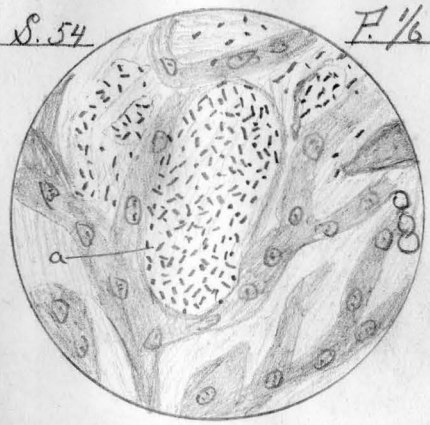


a Round Cell infiltration

M. 7-04

Hepatic Cirrhosis

S. 54 F. 1/6



a. Area of bacterial Infection

M. 7. 04

Chronic Inflammation. Intestine

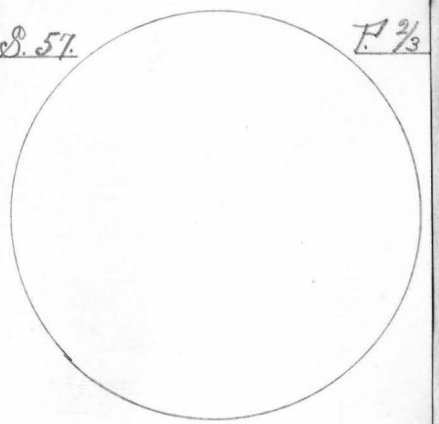
S. 56. F. 2/3

a. Villii nude of Epithelium
b. Brunens Glands.
c. Mucosa.
d. Submucosa.

M. 14. 04

Acute Inflammation. Intestine Duodenum.

S. 57. F. 2/3



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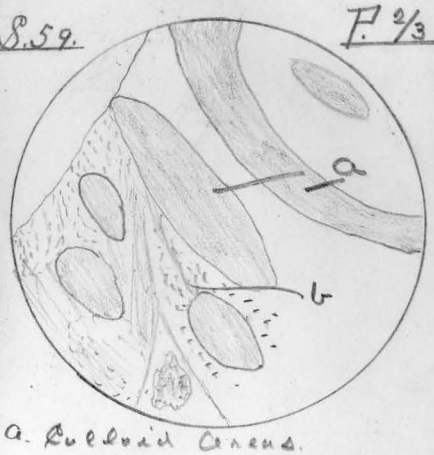
Colloid Degeneration
Stomach Carcinoma

S. 59. F. 2/3

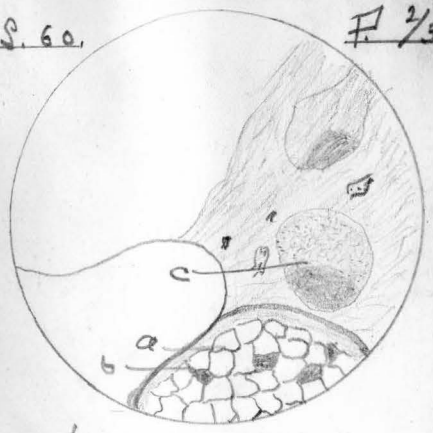


a. Colloid Areas.
b. Epithelial Areas.

M. 21. 04

Metastatic Carcinoma
Mesenteric Omentum

S. 60. F. 2/3



a. Fat of Omentum
b. Metastatic Cancer S.
c. Carcinoma. M. 21. 04

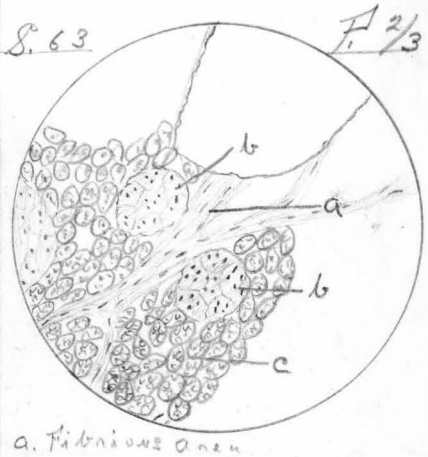
Tuberculosis of Pancreas.

S. 64 F. 2/3

a. Pancreas
b. Caseous Infiltration

Fibrosis Pancreas.

S. 63 F. 2/3



a. Fibrous Area
b. Islands of Langerhans
c. Acini.

M. 28. 04

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